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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/828,971

04/21/2004

Charles L. Gray JR.

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EXAMINER

BERTHEAUD, PETER JOHN

ART UNIT

PAPER NUMBER

3746

NOTIFICATION DATE

DELIVERY MODE

07/09/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Office Action Summary	Application No. 10/828,971	Applicant(s) GRAY, CHARLES L.	
	Examiner PETER J. BERTHEAUD	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10, 11 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10, 11 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 5, 13 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to amendments filed 3/27/2008. It is noted that claims 8, 13, and 14 have been amended and claim 21 has been cancelled.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Wahlmark 3,233,555.

Wahlmark discloses a variable displacement fluid device comprising a back plate 26 having a concave surface (see 26 in Fig. 2) in the shape of a section of a cylinder, the back plate 26 being configured to slideably receive a convex valve plate 62 thereon; first and second fluid ports 12, 13 formed in the concave surface and configured to transmit differentially pressurized fluid to the valve plate 62; first and second reaction plates 70 coupled to the back plate 26, each having a convex reaction surface (see upper portion of channel 64) in the shape of a section of a cylinder, concentric to, substantially facing, and spaced a selected distance from, the concave surface of the back plate 26.

In addition, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in

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terms of structure rather than function, because apparatus claims cover what a device is, not what a device does (*Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)). Thus, if a prior art structure is capable of performing the intended use as recited in the preamble, or elsewhere in a claim, then it meets the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 7, 16, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wahlmark 3,233,555.

Wahlmark discloses a variable displacement fluid device comprising a back plate 26 having first and second fluid ports 12, 13 configured to be differentially pressurized; a plurality of reaction plates 70 rigidly coupled to the back plate 26; a valve plate 62 slideably coupled to the back plate 26 and having first and second fluid feed channels 80, 81 configured to receive fluid from the first and second fluid ports 12,13, and a surface configured to receive a rotatable cylinder barrel (see col. 6, lines 27-29); and a plurality of hold-down ball bearings 63 positioned in respective hold-down sockets 67 formed in the valve plate 62, each of the hold-down ball bearings 63 configured to be biased, by pressurized fluid in the respective hold-down socket, against a surface 64 of

one of the reaction plates 70 (see col. 6, lines 1-19). Wahlmark also discloses a barrel 12, rotatably coupled to the valve plate 62 and having a plurality of drive cylinders 53 formed therein; a plurality of drive pistons 52, each having a first end positioned in a respective one of the plurality of drive cylinders 53; and a thrust plate 140 having a surface configured to receive second ends of each of the plurality of drive pistons 52, the thrust plate 140 coupled to a drive shaft 11 of the pump/motor. Wahlmark further discloses that each of the hold-down ball bearings 63 comprises a face conforms to the surface of the respective reaction plate 70.

Wahlmark discloses the claimed invention except for the hold-down ball bearings within sockets being hold-down pistons within cylinders. It would have been an obvious matter of design choice to make these ball bearings pistons, since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (see MPEP 2144.04 IV. B - Changes in Shape)

Wahlmark discloses the claimed invention except for their being at least six hold-down pistons. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least six pistons in order to more evenly distribute pressure, since such a modification would amount to a mere duplication of parts. It has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (see MPEP 2144.04 VI. B – Duplication of Parts)

Wahlmark discloses the claimed invention except for at least one of the hold-down pistons has a diameter that is smaller than another of the hold-down pistons. It would have been an obvious matter of design choice to make the hold-down pistons different diameters in order to have them distribute more or less pressure to the system, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (see MPEP 2144.04 IV. A - Changes in Size)

6. Claims 2 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wahlmark 3,233,555 in view of Bratt 4,991,492.

Wahlmark discloses the invention as discussed above. However, Wahlmark does not teach the following claimed limitations taught by Bratt.

Bratt discloses a axial piston machine comprising a valve plate 2, a barrel 1, a back plate 10, and a plurality of drive pistons 4, 5. Bratt further discloses that the valve plate 2 is configured to slide against the back plate 10 in an arc exceeding 40 degrees of rotation (see Fig. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the pump of Wahlmark by structuring the assembly to be able to rotate in an arc exceeding 40 degrees in order to obtain more complete pump strokes from the drive pistons.

7. Claims 3, 4, 6, 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wahlmark 3,233,555 in view of Forster 4,893,549.

Wahlmark discloses the invention as discussed above. However, Wahlmark does not teach the following claimed limitations taught by Forster.

Forster (Figs. 2 and 3) teaches an adjustable axial piston machine having a bent axis design comprising a back plate 9 having first and second fluid ports 21 configured to be differentially pressurized and a valve plate 6. Forster further teaches a plurality of hold-down ball pistons 15 positioned in respective hold-down cylinders 17 formed in the valve plate 6, each of the hold-down ball pistons 15 configured to be biased, by pressurized fluid in the respective hold-down cylinder 17, so as to press the valve plate 6 against a surface 8 of the back plate 9 (see col. 4, lines 50-58). Forster also teaches that the plurality of hold down pistons 15 is distributed along first and second edges of a same surface of the valve plate (see 15 in Figs. 2 and 3); wherein a central axis of hold-down cylinder 17 formed in a first side of the valve plate 6 lie in a first plane that is substantially perpendicular to the surface of the valve plate 6, and a central axis of hold-down cylinder 17 formed in a second side of the valve plate 6 lie in a second plane that is substantially perpendicular to the surface of the valve plate 6 and parallel to the first plane. Forster further teaches that at least one of the hold down pistons 15 distributed along the first edge of the valve plate 6 is in fluid communication with the first fluid feed channel 21 (through 20) and at least one of the hold-down pistons 15 distributed along the second edge of the valve plate is in fluid communication with the second fluid feed channel (see Fig. 3). Forster also teaches that each of the plurality of hold-down pistons 16 comprises an aperture passing along a central axis from a first surface to a second surface thereof (see pistons in Fig. 4); wherein the hold-down pistons (piston rods 16)

comprise a fluid passage extending along a central axis thereof from a cylinder end to a face of the respective pistons.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the pump of Wahlmark by implementing a pressurized fluid distribution system which feeds fluid from two different fluid feed channels to the pistons in order to keep the valve plate slidingly balanced as well as allow for the option to pressurize the pistons on either side of the valve plate different amounts.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wahlmark 3,233,555 in view of Schauer 3,382,813.

Wahlmark discloses the invention as discussed above. However, Wahlmark does not specifically teach a method of coupling a first pressurized fluid source to a rotatable barrel via a first fluid feed channel in a valve plate and a first fluid port in a back plate; coupling a second pressurized fluid source to the rotatable barrel via a second fluid feed channel in the valve plate and a second fluid port in the back plate.

Schauer teaches a hydraulic pump or motor comprising a rotatable barrel 25 and a valve plate 35 within a back plate 13. Schauer further teaches a method of coupling a first pressurized fluid source to a rotatable barrel 25 via a first fluid feed channel 80 (Fig. 2) in a valve plate 35 and a first fluid port 80 (Fig. 3) in a back plate 13; coupling a second pressurized fluid source to the rotatable barrel via a second fluid feed channel 81 (Fig. 2) in the valve plate 35 and a second fluid port in the back plate 81 (Fig. 3) (see col. 4, lines 32-38).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the pump of Wahlmark by specifically teaching a method concerning the coupling of various pressurized fluid sources to a rotatable barrel so as to accommodate the direction of rotation of the barrel (Schauer, col. 4, lines 32-38).

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wahlmark 3,233,555 in view of Schauer 3,382,813, and in further view of Forster 4,893,549.

Wahlmark in view of Schauer discloses the invention as discussed above. However, Wahlmark in view of Schauer does not teach the following claimed limitations taught by Forster.

Forster (Figs. 2 and 3) teaches an adjustable axial piston machine having a bent axis design comprising a back plate 9 having first and second fluid ports 21 configured to be differentially pressurized and a valve plate 6. Forster further teaches a plurality of hold-down ball pistons 15 positioned in respective hold-down cylinders 17 formed in the valve plate 6, each of the hold-down ball pistons 15 configured to be biased, by pressurized fluid in the respective hold-down cylinder 17, so as to press the valve plate 6 against a surface 8 of the back plate 9 (see col. 4, lines 50-58). Forster further teaches that at least one of the hold down pistons 15 distributed along the first edge of the valve plate 6 is in fluid communication with the first fluid feed channel 21 (through 20) and at least one of the hold-down pistons 15 distributed along the second edge of the valve plate is in fluid communication with the second fluid feed channel (see Fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the pump of Wahlmark by implementing a pressurized fluid distribution system which feeds fluid from two different fluid feed channels to the pistons in order to keep the valve plate slidingly balanced as well as allow for the option to pressurize the pistons on either side of the valve plate different amounts.

Response to Arguments

10. Applicant's arguments filed 3/27/2007 have been fully considered but they are not persuasive.

11. In response to Applicant's arguments with respect to claim 8: Applicant argues that Wahlmark does not disclose *"a back plate having a concave surface in the shape of a section of a cylinder ... and first and second reaction plates coupled to the back plate, each having a convex reaction surface in the shape of a section of a cylinder, concentric to, substantially facing, and spaced a selected distance from, the concave surface of the back plate."* Examiner respectfully disagrees. Examiner maintains that the concave arcuate track 69 does indeed curve around to face the back plate's concave surface. Also, the concave surface of 26, seen best in Fig. 2, most certainly reads on the broad limitation of "having a concave surface in the shape of a section a cylinder." The curved surface of 26 is in the shape of a curved side of a cylinder. As for the convex reaction surface in the shape of a section of a cylinder, surface 64 is curved to match the curved surface of 26; therefore, it is in the shape of "a section of a cylinder", due to it being curved like the side of a cylinder, and is obviously concentric to back plate 26.

Furthermore, the term “facing” and the phrase “in the shape of a section of a cylinder” are both sufficiently broad. A surface does not need to be parallel with a second surface in order to “face” it; a surface which is angled to a second surface can still be considered as “facing” it. Also, many elements could be considered to be “in the shape of a section of a cylinder”, in fact almost anything that has a curved outer surface could meet this description. Thus, the prior art of Wahlmark reads on the claim.

12. In response to Applicant’s arguments with respect to claims 1 and 16: Applicant argues that it would not have been an obvious matter of design choice to substitute pistons for the ball bearings in Wahlmark. Applicant goes on to argue that “ball bearings are used primarily to reduce friction in lateral movement between two surfaces, while a piston functions primarily to apply linear force.” While Examiner partially agrees, the ball bearings in Wahlmark are also used to apply a linear force (particularly to counteract a torque imparted to the port plate, see col. 6, lines 1-19). Furthermore, the ball bearings in Wahlmark act almost identical to the pistons in the present application, accomplishing the same goal of holding the valve plate against the back plate while allowing it slide back and forth smoothly.

With respect to claim 16, Applicant argues that Wahlmark does not teach that “each of the plurality of hold-down pistons comprises a face that conforms to the surface of the respective reaction plate.” Examiner respectfully disagrees. The ball bearings in Wahlmark are curved at the surface that faces the reaction plate, just like the pistons in the application; and because the ball bearings are surrounded by pressurized fluid, they too will conform to the reaction plate surface just as the pistons (even if ever so slightly).

Beyond that interpretation, since the ball bearings are curved, and the reaction plate's surface 69 in Wahlmark is curved, the ball bearings conform to the reaction plate surface in that respect as well; therefore, this limitation can be met by multiple interpretations.

In response to Applicant's argument that the balls bearings would be incapable of rolling properly if they were made to conform to the surface of the reaction plates: just as the pistons in the application slide on the reaction plates, so too could the reshaped ball bearings. Therefore, Examiner maintains that it would have been an obvious matter of design choice to change the shape of the ball bearings in Wahlmark because the functionality of the device would not suffer due to this modification.

13. In response to Applicant's arguments with respect to claim 18: Applicant argues that it would not have been obvious to make the hold down pistons different diameters. Examiner respectfully disagrees. As stated previously, making the pistons different diameters allows them to distribute more or less pressure to the system. This would be necessary if the torque imparted to the port plate needed to be counteracted in incremental amounts, or by different amounts depending on the point in the pump cycle. Therefore, it would be an obvious matter of design choice.

Allowable Subject Matter

14. Claims 5, 13, and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER J. BERTHEAUD whose telephone number is (571)272-3476. The examiner can normally be reached on M-F 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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